IN THE CLAIMS:

1. (currently amended) A virtual network construction method <u>for a public data communication network</u> comprising the steps of:

generating and multicasting control packets each having set a multicast address predetermined per virtual network in first relaying apparatuses originating a virtual network within a̶ <u>the</u> public data communication network, and

establishing virtual links to the first relaying apparatuses which are transmitting sources of the control packets upon receipt thereof and returning reply packets through the virtual links in second relaying apparatuses belonging to t̶h̶e̶ <u>a</u> multicast address group <u>represented by the multicast address,</u>

whereby the virtual links are established between all pairs of the first and the second relaying apparatuses belonging to the multicast address group to construct the virtual network <u>that is preliminarily associated with a virtual relaying structure, which is independently operable per virtual network, provided in the first and the second relaying apparatuses mutually connected by the public data communication network.</u>

2. (original) The virtual network construction method as claimed in claim 1 wherein the second relaying apparatuses authenticate the control packets received.

3. (original) The virtual network construction method as claimed in claim 1 wherein the virtual links comprise IP tunnels.

4. (original) The virtual network construction method as claimed in claim 1 wherein the virtual links comprise MPLS tunnels.

5. (currently amended) A virtual network construction system for a public data communication network comprising:

first relaying apparatuses for generating and multicasting, when starting a construction of a virtual network within a the public data communication network, control packets each having set a multicast address predetermined per virtual network, and

second relaying apparatuses for establishing virtual links to the first relaying apparatuses which are transmitting sources of the control packets upon receipt thereof and for returning reply packets through the virtual links,

whereby the virtual links are established between all of the first and the second relaying apparatuses belonging to the a multicast address group represented by the multicast address by operations thereof to construct the virtual network that is preliminarily associated with a virtual relaying structure, which is independently operable per virtual network, provided in the first and the second relaying apparatuses mutually connected by the public data communication network.

6. (original) The virtual network construction system as claimed in claim 5 wherein the second relaying apparatuses establishing the virtual links authenticate the control packets received.

7. (original) The virtual network construction system as claimed in claim 5 wherein the virtual links comprise IP tunnels.

8. (original) The virtual network construction system as claimed in claim 5 wherein the virtual links comprise MPLS tunnels.

9. (currently amended) A relaying apparatus, which terminates a virtual network within a public data communication network comprising:

a virtual relaying structure preliminarily associated with the virtual network, which is independently operable per virtual network,

means for generating and multicasting control packets each having set a multicast address predetermined per virtual network, and

means for establishing virtual links to other relaying apparatuses which are transmitting sources of the control packets upon receipt thereof and for returning reply packets through the virtual links,

whereby the virtual links are established between all of the relaying apparatuses belonging to the multicast address group to construct the virtual network.

10. (original) The relaying apparatus as claimed in claim 9, further comprising means for authenticating the control packets received.

11. (original) The relaying apparatus as claimed in claim 9, further comprising means for generating a routing table for each of a plurality of virtual networks logically independent of one another, and means for performing a packet relay of each virtual network based on the routing table.

12. (original) The relaying apparatus as claimed in claim 9 wherein the virtual links comprise IP tunnels.

13. (original) The relaying apparatus as claimed in claim 9 wherein the virtual links comprise MPLS tunnels.